

Answer

Jahangirnagar University
Department of Computer Science & Engineering
1st Year 2nd Semester B.Sc. (Hons.) Final Examination 2017

Course No: CSE-161

Time: 3 Hours.

Course Title: Management and Accounting

Total Marks: 60

Answer any FOUR questions. All parts of each question must be answered consecutively.

- Done* 1
1. a) Four financial statements are prepared from the summarized accounting data, 5 what are these statements, write down in short.
b) State the accounting equation, & define assets, liabilities, & owner's equity. 5 What items affect the Owner's Equity?
c) What do you mean by Monetary unit & Economic unit assumption? 3
d) Is there any difference between Accounting & Bookkeeping? If yes, show the 2 differences.

2. a) What is span of management? How a manager can determine the appropriate 5 span of management?
b) What is specialization? Identify and describe the alternatives to specialization. 5
c) What is leadership? Discuss about the various nature of leadership practices in 3 organization
d) Distinguished between goal and plan of an organization. 2

3. Ms. Iram opens her own law office on July 1, 2011. During the first month of operations the following transactions occurred.

- i) Invested Tk. 10,000 in cash in the law practice
ii) Paid Tk.800 for July rent on office space.
iii) Purchased office equipment on account Tk. 3,000
iv) Provided legal services to clients for cash Tk.1500.
v) Borrowed Tk.700 cash from a bank on a note payable.
vi) Performed legal services for client on account Tk. 2,000.
vii) Paid monthly expenses: salaries Tk.500, utilities Tk.300, and telephone Tk.100.

Henry Taylor

Instructions

- a) Prepare a tabular summary of the transactions. 5
b) Prepare the income statement, owner's equity statement, and balance sheet at July 31 for Ms. Iram, Attorney at Law. 10

4. Bobby Sample opened the campus laundromat on September 1, 2008. During the first month of operations the following events occurred.

Sept. 1 Invested Tk. 20,000 cash in the business



Jahangirnagar University
Department of Computer Science and Engineering
3rd Year 2nd Semester B.Sc. (Hons.) Final Examination - 2021

Course Title: Microprocessors
Time: 3 Hrs.

Course No: CSE-357
Full Marks: 60

[Answer each of the following questions. Each question carries equal marks. Figures in the right margin indicate marks.]

1. Answer all questions:

- a) What is a microprocessor? What are the functions of a CPU? ✓ 2
- b) Mention the relative advantages and disadvantages of a high level and assembly language. ✓ 2
- c) State the differences between RISC and CISC microprocessors. ✓ 2
- d) Mention some properties of INTEL 8086 microprocessor. ✓ 2
- e) If [DS] = 205FH and OFFSET = 0051H, what is the physical address? Does the EU or BIU compute this physical address? ✓ 2
- f) What is the difference between an Intel Core i5 and Core i7? 2

2. Answer **Any Three** out of **Four** questions:

- a) Draw the internal architecture of INTEL 8086 microprocessor and mention the purpose of BIU and EU. 3 4
- b) What is the relationship between the 8086 and 8284 input clocks? Does the 8086 have an on-chip clock circuitry? Comments. 4
- c) Draw the pin assignment diagram of the INTEL 8086 microprocessor when it works in maximum mode and give a truth table of pin number 26, 27, and 28. 4
- d) Construct a (4K × 8) RAM using (4K × 1) RAM chips. 3 4 4

3. Answer **Any Three** out of **Four** questions:

- a) Why is it necessary at the start of an interrupt service procedure to PUSH all registers used in the procedure and to POP them at the end of the procedure? 4
- b) Explain with figure how data can be transferred between main memory and an external I/O device using DMA controller. 3 4 4
- c) Draw the READ and WRITE cycle timing diagram of a typical semiconductor memory with different parameters. 3 4
- d) Briefly describe synchronous and asynchronous serial communication. 3 4



Jahangirnagar University
Department of Computer Science and Engineering
Fourth Year First Semester B.Sc. (Hons.) Final Examination -2021

Course Title: **Computer Networks**

Time: **3 Hours**

Course No: **CSE-401**

Full Marks: **60**

[Answer each of the following questions. Each question carries equal marks. Figures in the right margin indicate marks.]

1.

Question No. 1 based on **CO1**. Answer all of them.

- a) Why ATM cell is preferable for high speed data communication? 2
- b) Mention two basic functions of LLC sublayer. 2
- c) Compare IP address and MAC address. 2
- d) What are the basic functions of presentation layer under OSI? 2
- e) Write down the series of steps performed by a browser to bring a webpage when a user clicks on a hyperlink. 2
- f) Identify different classes of IP address and give their ranges. 2

2.

Question No. 2 based on **CO2**. Answer Any three out of four.

- a) (i) What is the main problem of 'Byte count method' in framing? Give your opinion about its remedial measure. 2
(ii) What is the best case and worst case of 'byte stuffing' and 'bit stuffing' technique of framing? 2
- b) Compare leaky and token bucket algorithm in traffic shaping. The capacity of the token bucket $C = 250\text{KB}$, token arrival rate $\rho = 2\text{MB/sec}$ and the maximum drain rate $M = 25\text{MB/sec}$. Determine (i) duration of maximum rate (ii) time to maintain the token rate for the volume of the burst data of 1MB. 4
- c) Why DNS is used against IP of a web? Give the steps of determination of IP address against a DNS. 4
- d) Explain the CSMA/CD Protocol in MAC Sublayer. 4

3.

Question No. 3 is based on **CO3**. Answer Any three out of four.

- a) An information source generates message bit string, $M = 1\ 1\ 0\ 0\ 1\ 0\ 1\ 1$ (8 bits); Generator bit string, $G = 1\ 0\ 0\ 0\ 1$ (5 bits); i) Determine the polynomials: $R(x)$ and $T(x)$ ii) How to avoid ambiguity of single bit, 2 bits and odd number of bit error? 3
1
- b) Compare asymmetric and symmetric release of end to end connection. Show the arrangement of three-way handshake for connection release. How to avoid loss of DR and ACK under this protocol? 3
1

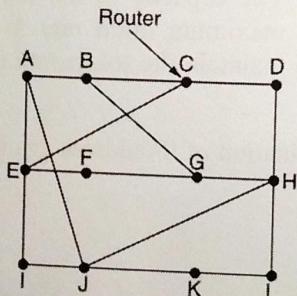
- c) Draw the complete diagram of IPv4 packet and mention the function of Differentiated Services and Fragment Offset. Give steps of calculating a header checksum of IP packet. 4
- d) Differentiate between Go-Back-N and selective repeat Data Link Layer protocol with timing diagrams. 4

4. Question No. 4 is based on **CO4**. Answer *Any three*.

- a) Give basic principle of asymmetric key cryptography. Taking $p = 3$ and $q = 11$ determine all the parameters of RSA then verify encryption and decryption of the vector $\mathbf{V} = [12 \ 7 \ 15]$. 4
- b) Consider user1 under a residential area is sending an e-mail to user2 working in an organization. Suppose that the mail servers of them are *isp.com* and *organization.com* respectively. The e-mail addresses of user1 and user2 are *user1@isp.com* and *user2@organization.com* respectively. Give the steps for e-mail exchange between user 1 and user 2 with appropriate diagram. 4
- c) (i) Clarify *Transfer mode* and *Asynchronous* of ATM. Show the VC and VP switching of ATM network with appropriate diagram and table. 3
(ii) Compare congestion control and flow control 1
- d) Draw the block diagram of the TCP header and briefly explain the significance of different fields. 4

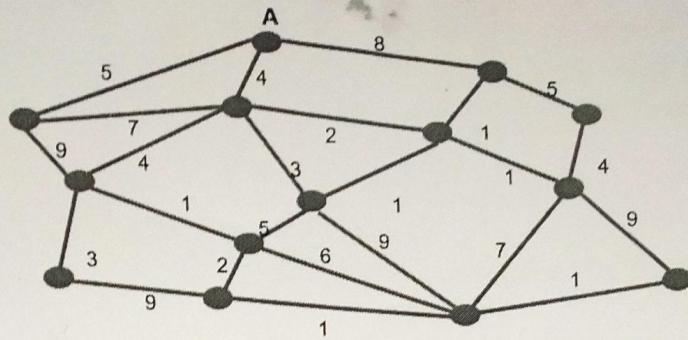
5. Question No. 5 is based on **CO5**. Answer *Any two*.

- a) (i) If the new delay of links associated with node J is, $JA=20ms$, $JF=25ms$, $JH=18ms$ and $JK=30ms$ then determine the new delay of J to F using help of following routing table under distance vector routing algorithm. 4

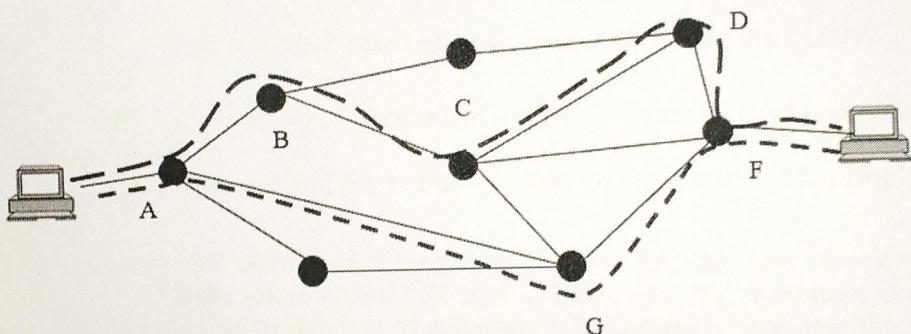


To	A	I	H	K
A	0	24	20	21
B	12	36	31	28
C	25	18	19	36
D	40	27	8	24
E	14	7	30	22
F	23	20	19	40
G	18	31	6	31
H	17	20	0	19
I	21	0	14	22
J	9	11	7	10
K	24	22	22	0
L	29	33	9	9

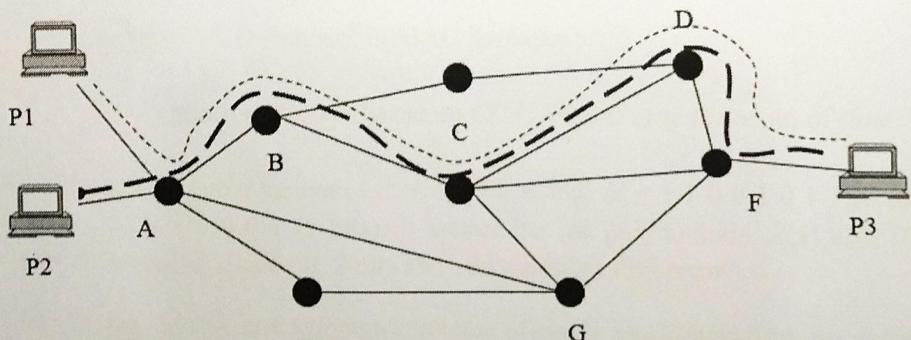
- (ii) Draw the sink tree of the following network taking A as the root/destination 2



- b) (i) Suppose two TCP connections are present over some bottleneck link of rate R bps. Both transmissions of the files start at the same time. What transmission rate would TCP like to give to each of the connections? 4
- (ii) If the subnet mask 255.255.255.224 is used for a class C IP address then find the number of subnets and number of hosts/subnet. If above subnet mask is used for class B IP address then find the number of subnets and number of hosts/subnet. 2
- c) (i) Show the routing table of router A for connectionless service where first few packets follow A-G-F route and the subsequent packets follow A-B-C-F route. 2



- (ii) Show the routing table of all routers for connection-oriented service, where process P1 and P2 send packets to process P3. 2



- (iii) Give three remedial measures against excess flooding of packet in a network. 2

[End of question script]



Jahangirnagar University
Department of Computer Science and Engineering
3rd Year 2nd Semester B.Sc. (Hons.) Final Examination -2021

Course Title: Introduction to Bioinformatics
Total Time: 3 Hours

Course Code: CSE 355
Full Marks: 60

[Answer all the sections]

Q1.

Section-I (CO1): Answer all the questions.

- a. Give the concept of bioinformatics. 2
- b. Define phylogenetic tree. 2
- c. Outline the concept of biological database. List out some biological databases under different categories. 2
- d. Point out the relationship between PAM and BLOSUM scoring matrices. 2
- e. Write the differences between genetic code and codon. 2
- f. Define linear and affine gap penalty. 2

Q2.

Section-II (CO2): Answer any THREE out of FOUR.

- a. Explain central dogma of molecular biology.
- b. Differentiate global alignment of sequences from the local alignment. Explain how bioinformatics is different from conventional biology. 4
- c. Given four scoring matrices for sequence alignments: PAM1, PAM10, BLOSUM45 and BLOSUM90. Now,
 - i. Identify the matrices that should be used for the alignment of closely related protein sequences and evolutionarily divergent protein sequences. 1
 - ii. Express the meaning of PAM1 and BLOSUM 45. 2
 - iii. Discuss the way of computing PAM250. 1
- d. Given three sequences X, Y and Z as:

X	A	A	G	G	C	T	T
Y	A	A	G	G	C		
Z	A	A	G	G	C	A	T

- i. If X = Y and Y = Z in terms of identity distance measure, then estimate if X = Z? 2
- ii. Observe the relative mutability of A, G, C and T by considering only X and Z as sequences. 2

Q3.

Section-III (CO3): Answer any THREE out of Four.

- a. Calculate linear gap penalty and affine gap penalty from the following alignments: 4

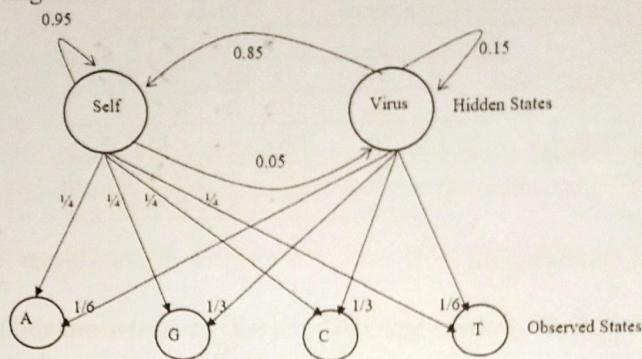
t	a	c	g	t	g	-	-	a	g	g	t
t	a	c	a	t	g	c	t	a	g	g	t

Gap opening penalty = 5 ✓
Gap extension penalty = 1

Substitution matrix

	a	c	g	t
a	2	-3	-1	-3
c	-3	2	-3	-1
g	-1	-3	2	-3
t	-3	-1	-3	2

- b. Consider the following hidden Markov model:



$1 \cdot 2 \cdot 8 \cdot 6 \cdot 9 \times 10^{-4}$

Estimate the probability of the following sequence: ACAGT

- c. Consider the following evolutionary distance matrix between species A, B, C, D and E.

	B	C	D	E
A	0.31	1.01	.75	1.03
B	-	1.00	0.69	0.90
C	-	-	0.61	0.42
D	-	-	-	0.37

Conclude the relationship between these species from the phylogenetic tree produced by Fitch and Margoliash algorithm.

..... Best Wishes

Attachment

Codon Table

UUU	Phe	UCU	Ser	UAU	Tyr	UGU	Cys
UUC		UCC		UAC		UGC	
UUA	Leu	UCA		UAA	Stop	UGA	Stop
UUG		UCG		UAG		UGG	Trp
CUU		CCU		CAU		CGU	
CUC	Leu	CCC	Pro	CAC	His	CGC	
CUA		CCA		CAA	Gln	CGA	Arg
CUG		CCG		CAG		CGG	
AUU		ACU		AAU		AGU	
AUC	Ile	ACC		AAC	Asn	AGC	Ser
AUA		ACA	Thr	AAA		AGA	
AUG	Met	ACG		AAG	Lys	AGG	Arg
GUU		GCU		GAU		GGU	
GUC		GCC		GAC	Asp	GGC	
GUA	Val	GCA	Ala	GAA		GGA	Gly
GUG		GCG		GAG	Glu	GGG	

BLOSUM62 Matrix

C	S	T	A	G	P	D	E	Q	N	H	R	K	M	I	L	V	W	Y	F
C 9																			C
S -1	4																		S
T -1	1	5																	T
A 0	1	0	4																A
G -3	0	-2	0	6															G
P -3	-1	-1	-1	-2	7														P
D -3	0	-1	-2	-1	-1	6													D
E -4	0	-1	-1	-2	-1	2	5												E
Q -3	0	-1	-1	-2	-1	0	2	5											Q
N -3	1	0	-2	0	-2	1	0	0	6										N
H -3	-1	-2	-2	-2	-2	-1	0	0	1	8									H
R -3	-1	-1	-1	-2	-2	-2	0	1	0	0	5								R
K -3	0	-1	-1	-2	-1	-1	1	1	0	-1	2	5							K
M -1	-1	-1	-1	-3	-2	-3	-2	0	-2	-2	-1	-1	5						M
I -1	-2	-1	-1	-4	-3	-3	-3	-3	-3	-3	-3	1	4						I
L -1	-2	-1	-1	-4	-3	-4	-3	-2	-3	-3	-2	2	2	4					L
V -1	-2	0	0	-3	-2	-3	-2	-2	-3	-3	-2	1	3	1	4				V
W -2	-3	-2	-3	-2	-4	-4	-3	-2	-4	-2	-3	-3	-1	-3	-2	-3	11		W
Y -2	-2	-2	-2	-3	-3	-3	-2	-1	-2	2	-2	-2	-1	-1	-1	-1	2	7	Y
F -2	-2	-2	-2	-3	-4	-3	-3	-3	-3	-1	-3	-3	0	0	0	-1	1	3	F
C	S	T	A	G	P	D	E	Q	N	H	R	K	M	I	L	V	W	Y	F



Jahangirnagar University
Department of Computer Science and Engineering
3rd Year 2nd Semester B.Sc. (Hons.) Final Examination -2021

Course Title: Human-Computer Interaction
Time: 3.00 hours

Course No: **CSE-353**
Full Marks: **60**

[Answer each of the following questions. Each question carries equal marks. Figures in the right margin indicate marks.]

1. Question No. 1 will be based on **CO1**. Answer *All of them*.

- a) What is Human-Computer Interaction (HCI)? Explain its importance. 2
- b) Design the key terms of interaction design basics. 2
- c) Mention the required functions of designing a frontal lobe. 2
- d) State some matrices of International Standard Organization (ISO) usability standard 9241. 2
- e) Define errors and mental models. 2
- f) Why is it good practice to use standards and guidelines when designing interfaces? 2

2. Question No. 2 will be based on **CO2**. This question will be consisting of **Four** Sections.
Answer *Any Three* out of **Four**.

- a) Describe the lobes of the human brain, grey matter and white matter. 4
- b) Discuss the process of design. 4
- c) Mention seven stages of Donald Normans' Model of interaction and classify them into goal, execution and evaluation. 4
- d) Explain the experimental evaluation process with the help of experimental factors and variables. 4

3. Question No. 3 will be based on **CO3**. Answer **Any Three** out of **Four**.

- a) Explain the laboratory studies and field studies for the evaluation process through user participation. 4
- b) Discuss requirement specification, architectural design, and design activities of the software development life cycle. 4
- c) ~~Describe five types of cognitive process explaining how they can result in human error when using a computer system.~~ *Describe the types of design rules?* 4
- d) ~~Discover the problems a user may face with cognitive impairments and learning difficulties, and write the steps to be considered to defend those impairments.~~ 4

Question No. 4 will be based on **CO4**. Answer **Any Three** out of **Four**.

- 4. a) Identify three evaluation techniques which would be appropriate for evaluating the interface of an air traffic control. 4
- b) Describe the Shneiderman's 8 Golden Rules and Norman's 7 Principles. 4
- c) Explain the physiological methods of eye tracking and physiological measurement. 4
- d) Illustrate the guidelines for design rules and Virtual Reality (VR). 4

Question No. 5 will be based on **CO5**. Answer **Any Two** out of **Three**.

- 5. a) Critically evaluate the utility of the heuristic evaluation approach when the heuristic evaluation is a popular technique for the measuring the general usability of an interface. *fixation saccade gaze 6s na can* 6
- b) Describe 5 (five) types of cognitive process explaining how they can result in human error when using a computer system. 6
- c) i. Describe GOMS techniques with an example for CLOSE WINDOW. *quick transition* 3
ii. Discuss KLM to provide rough measures of user performance in terms of execution times for basic sequence of actions. 3



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3rd Year 2nd Semester B.Sc. (Hons.) Final Examination - 2021

Course Title: Microprocessors
Time: 3 Hrs.

Course No: CSE-357
Full Marks: 60

[Answer each of the following questions. Each question carries equal marks. Figures in the right margin indicate marks.]

1. Answer all questions:
 - a) What is a microprocessor? What are the functions of a CPU? ✓ 2
 - b) Mention the relative advantages and disadvantages of a high level and assembly language. ✓ 2
 - c) State the differences between RISC and CISC microprocessors. ✓ 2
 - d) Mention some properties of INTEL 8086 microprocessor. ✓ 2
 - e) If [DS] = 205FH and OFFSET = 0051H, what is the physical address? Does the EU or BIU compute this physical address? ✓ 2
 - f) What is the difference between an Intel Core i5 and Core i7? 2
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 - b) What is the relationship between the 8086 and 8284 input clocks? Does the 8086 have an on-chip clock circuitry? Comments. 4
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 - d) Construct a (4K × 8) RAM using (4K × 1) RAM chips. 3 4
3. Answer Any Three out of Four questions:
 - a) Why is it necessary at the start of an interrupt service procedure to PUSH all registers used in the procedure and to POP them at the end of the procedure? 4
 - b) Explain with figure how data can be transferred between main memory and an external I/O device using DMA controller. 3 4
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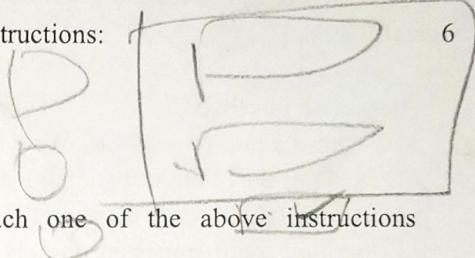
- a) i. Point out some features of Pentium processors. ✓✓ 4
ii. Show the internal architecture of INTEL 80286 microprocessor. ✓
- b) Explain with necessary figure how the INTEL 80286 microprocessor translates logical address to physical address. 2
- c) Construct a typical interface circuit to interface an 8x8 keypad and 8-digit display with 8279 IC.
- d) Explain the modes of operation determined by bits 7 and 6 of IC 8237 channel's mode register. 4

5. Answer Any Two out of Three questions:

- a) Determine the effect of each one of the following 8086 instructions: 6
- i) PUSH [BX]
 - ii) DIV DH
 - iii) CWD
 - iv) MOVSB

Assume the following data prior to execution of each one of the above instructions independently. Assume all numbers in hexadecimal.

[DS] = 3000H [SI] = 0400H
[ES] = 5000H [DI] = 0500H
[DX] = 0400H DF = 1
[SP] = 5000H [BX] = 6000H
[SS] = 6000H
[AX] = 00A9H
[36000H] = 02H, [36001H] = 03H
[50500H] = 05H
[30400H] = 02H, [30401] = 03H



- b) Write down the assembly language statements which will perform the following operations: 6

- i. Load the number 7986H into the BP register.
- ii. Copy the BP register contents to the SP register.
- iii. Copy the contents of the AX register to the DS register.

- c) Assume the following microprocessor and the RAM chip. Draw a neat logic diagram showing connections between the microprocessor and RAM chip(s) to obtain a memory of 6KB and analyze the memory map. Use linear decoding technique. 6

